

REMARKS

Claims 1-8, 10, 12-23, 25, 27-30, 45, 47-49 and 51-179 were pending in this application. Claims 54 and 55 have been cancelled by this amendment. The following claims have been amended: 1, 13, 17, 18, 21, 27, 28, 45, 51, 57, 66, 78, 103, 116, 124, 132, 138, 144, 150, 156, 162, 168, and 174. These amendments are principally clerical in nature and each of these amendments is supported by the specification. For example, the amendments to claims 45 and 51 are supported in the specification at page 12, lines 12-18 and page 14, lines 9-12.

Note that claims 1, 17, 57, 66, 78, 116, and 124 have been amended to reflect that a comparison or other operation is performed on “at least one of the product strings,” while the previous claim language simply referred to “the product strings.” It is believed that the “at least one” phrase was at least implicit in the previously presented claim language. Further, see the discussion at page 25, line 12 to page 26, line 22, where techniques for selecting concatenated character strings are described. Selection necessarily implies the operation can be employed to one or more of the strings. It is believed that the new terminology is supported in the specification and entry is respectfully requested.

Applicants acknowledge with gratitude the indication of allowable subject matter (claims 1-6, 10, 12, 14-20, 25, 29, 30, 47-49, 51-53, 56-65, 90-93, 96-106, 109-143, and 156-179).

The various points raised in the outstanding Action will now be addressed in turn.

Preliminary Remark

The Examiner noted an objection to the drawings. To address this objection, formal drawings are provided herewith.

Priority

The Action acknowledges the priority claim made by amendment on September 27, 2001. Per the Examiner's request, Applicants have amended the specification to update the status of applications listed in the cross-reference section.

In the priority section, the Examiner goes on to make the following statement:

Finally, the earliest effective filing date of the instant application has been determined to be October 12, 1999, from U.S. 09/416,837, now abandoned. Applications filed after said date fail to provide proper support under 35 U.S.C. 112, first

paragraph. Said Applications fail to provide support for encoding two or more biological molecules into a data structure of initial character strings, wherein two substrings are selected therefrom, followed by their concatenation.

Applicants respectfully point out that support for claims under 35 U.S.C. § 112, first paragraph is determined on a claim-by-claim basis. Further, Applicants reserve the right to show that specific claims are supported by any one or more of the applications referenced in the September 27, 2001 amendment. However, such showing is not necessary to establish patentability over the currently cited art.

Sequence Rules

In order to comply with the sequence rules 37, C.F.R. §1.821-1.825, this response is accompanied by a floppy disc containing the referenced sequence (SEQ ID NO: 1) in computer readable form, and a paper copy of the corrected sequence information. This corrected sequence listing addresses the issue identified in the CRF Error Report provided with the current Action. The information contained in the computer readable disc is identical to that of the paper copy and no new matter is added. Applicants respectfully submit that this statement, the accompanying computer readable sequence listing, and the paper copy thereof serve to place this application in compliance with the rules of 37 C.F.R. §1.821-1.825.

Information Disclosure Statement

The Office acknowledged the IDSs received on October 14, 2003 and January 12, 2004. Applicants appreciate the consideration given to these IDSs by the Examiner.

A separate IDS was subsequently filed by Applicants and received by the Office on May 17, 2004 as indicated in Private PAIR. Applicants request that the Examiner consider the references cited in this IDS as well.

Claim Rejections – 35 USC § 112

Claims 7, 8, 13, 21-23, 27, 28, 45, 54, 55, 66-89, 94, 95, 107, 108, and 144-155 were rejected under 35 USC § 112, second paragraph for various reasons. These rejections will be addressed in the order presented in the Action.

Claims 7, 8, 22, 23, 69, 70, 81, 82, 94, 95, 107, and 108 were rejected for recitation of the phrase “selecting at least one substring from an initial character string such that the ends of said substring occur in string regions”. The Action states that it is unclear whether the

word “ends” denotes the last character of the substring or a region comprising the last character of the substring. The Examiner assumed the former interpretation for the purpose of prosecution. This is the correct interpretation. The “ends” of a substring are denoted by the beginning and ending characters in a character substring. The claims in question recite characteristics of the substring or initial string at locations where the ends of the substring occur.

It is believed that this explanation resolves any ambiguity and no amendment is necessary. If the Examiner disagrees, he is invited to call the undersigned to discuss terminology that would be acceptable.

Claims 13, 27, and 28 were rejected for recitation of the phrase “altering one or more occurrences of a particular preselected character in said character strings”. This limitation was deemed problematic because, according to the Office, it is unclear whether “said character strings” referenced initial character strings, selected substrings, or produced product strings. To remove any possibly ambiguity, claims 13, 27, and 28 have been amended to indicate that the character strings are “initial or product” character strings. Withdrawal of the rejection is therefore respectfully requested.

Claim 21 was deemed indefinite for recitation of the phrase “initial character strings have at least 30% sequence identity” because, according to the Office, “it is unclear to what the homology is compared against.” It is respectfully submitted that it should be clear that the sequence identity is determined between the initial character strings with each other. This comparison has been made explicit by amendment. Withdrawal of the rejection is respectfully requested.

Claim 45 was rejected for recitation of the term “related” because, according to the Office, “it is unclear whether the character strings are related in that it comprises a requisite degree of homology, from the same genus, same species, same sequences, etc.” The concept of related sequences is described at page 12, lines 12-18 and at page 14, lines 9-12, for example. Claims 45 and 51 have been amended to spell out the concept of related sequences, as that concept is presented in the specification. Withdrawal of the rejection is respectfully requested.

Claims 54 and 55 were rejected but the rejection is now moot as these claims have been cancelled.

Finally, claims 66-89 and 144-155 were rejected for recitation of the operation “providing an alignment of the product strings”. According to the Office, “it is unclear whether the product strings are aligned against other product strings, or the initial strings, or substrings, etc. . . .” Independent claims 66 and 78 have been amended to bring the language of these claim elements into closer agreement with the corresponding language in claim 1.

Specifically, the amended claims now specify that the product strings are aligned “relative to at least one initial character string”. It is believed that these amendments clarify any ambiguity. Withdrawal of the rejections is respectfully requested.

Double Patenting – duplicate claims

Claim 18 was objected to under 37 CFR 1.75 as being a duplicate of claim 19. The Applicants previously inadvertently amended claims 18 and 19 to have the same claim language. This mistake has been remedied by deleting the phrase “encoding naturally occurring proteins” in claim 18. Therefore, the claims are no longer duplicates. Withdrawal of the double patenting rejection is respectfully requested.

Conclusion

In light of the foregoing amendments and remarks, Applicants respectfully submit that all pending claims are now in condition for allowance. Thus, Applicants respectfully request a Notice of Allowance from the Examiner. Should any unresolved issues remain, the Examiner is encouraged to contact the undersigned at the telephone number provided below. If the Commissioner determines that any additional fees are due, such fees may be charged to deposit account No. 50-0388 (Order No. MXGNP002X1).

Respectfully submitted,
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